

CLAIMS

1. A pressure polymerisation process yielding a copolymer comprising monomer units derived from ethylene and at least one vinyl ester
characterised in, that said polymerisation is performed in presence of at least one dendritic polymer, such as a dendritic polyester, polyether, polyesteramide and/or polyetheramide.
2. A pressure polymerisation process according to Claim 1
characterised in, that said dendritic polymer is present in an amount of 0.1-20%, such as 0.1-10% or 0.5-5%.
3. A pressure polymerisation process according to Claim 1 or 2
characterised in, that said dendritic polymer is built up from a core molecule and at least one branching chain extender at a molar ratio yielding at least one dendritic generation.
4. A pressure polymerisation process according to Claim 3
characterised in, that said core molecule is a di, tri or polyfunctional alcohol and that said at least one branching chain extender is at least one di, tri or polyhydroxyfunctional monocarboxylic acid.
5. A pressure polymerisation process according to Claim 3
characterised in, that said core molecule is a di, tri or polyfunctional alcohol and that said at least one branching chain extender is at least one hydroxyfunctional oxetane of at least one tri or polyfunctional alcohol.
6. A pressure polymerisation process according to any of the Claims 3-5
characterised in, that said dendritic polymer is at least partly further chain extended by addition of at least one linear or branched chain extender and/or chain stopper.
7. A pressure polymerisation process according to Claim 6
characterised in, that said at least one linear or branched chain extender and/or chain stopper is at least one alkylene oxide, at least one saturated or unsaturated aliphatic or aromatic carboxylic acid or at least one corresponding anhydride or halide, and/or at least one carboxyfunctional ester, polyester, ether and/or polyether.
8. A pressure polymerisation process according to any of the Claims 1-7
characterised in, that said dendritic polymer has at least two dendritic generations.

9. A pressure polymerisation process according to any of the Claims 1-8 characterised in, that said at least one vinyl ester is vinyl acetate, vinyl propionate, vinyl isobutyrate, vinyl 2-ethylhexanoate, vinyl versatate and/or vinyl laurate.
10. A pressure polymerisation process according to any of the Claims 1-9 characterised in, that said at least one vinyl ester is vinyl acetate and/or vinyl versatate.
11. A pressure polymerisation process according to any of the Claims 1-10 characterised in, that said yielded copolymer additionally comprises monomer units derived from at least one cross-linking functional monomer.
12. A pressure polymerisation process according to Claim 11 characterised in, that said at least one cross linking functional monomer is a monomer having at least one polymerisable vinyl group.
13. A pressure polymerisation process according to Claim 11 or 12 characterised in, that said at least one cross linking functional monomer is at least one unsaturated organic acid amide, at least one N-methylol derivative of at least one unsaturated organic acid amide and/or at least one ether of at least one N-methylol derivative of at least one unsaturated organic acid amide.
14. A pressure polymerisation process according to any of the Claims 11-13 characterised in, that said at least one cross linking functional monomer is acryl amide, N-methylolacrylamide, N-methylolmethacrylamide, N-(*iso*-butoxymethyl)-acrylamide and/or N-(*n*-butoxymethyl)acrylamide.
15. A pressure polymerisation process according to any of the Claims 11-13 characterised in, that said at least one cross linking functional monomer is a glycidyl acrylate, a glycidyl methacrylate and/or allyl methacrylate.
16. A pressure polymerisation process according to any of the Claims 11-13 characterised in, that said at least one cross linking functional monomer is at least one di, tri and multifunctional ester of a di, tri or polyhydric alcohol and acrylic and/or methacrylic acid.
17. A pressure polymerisation process according to Claim 16 characterised in, that said at least one cross linking functional monomer is butanediol diacrylate, dipropylene glycol diacrylate, hexandiol diacrylate, tripropylene glycol diacrylate, butanediol dimethacrylate, ethylene glycol dimethacrylate, diethylene

glycol dimethacrylate, trimethylolpropane triacrylate, trimethylolpropane triacrylate, ethoxylated trimethylolpropane triacrylate and/or ethoxylated pentaerythritol diacrylate.

18. A pressure polymerisation process according to any of the Claims 11-13 characterised in, that said at least one cross linking functional monomer is at least one trialkoxyvinylsilane, alkylidialkoxyvinylsilane, acryloxyalkoxysilane, acryloxyalkylalkoxysilane, alkoxyacrylsilane, methacryloxyalkoxysilane, methacryloxyalkylalkoxysilane and/or alkoxymethacrylsilane.
19. A pressure polymerisation process according to Claim 18 characterised in, that said alkyl and/or said alkoxy is linear or branched having 1-4 carbon atoms.
20. A pressure polymerisation process according to Claim 18 or 19 characterised in, that said at least one crosslinking monomer is trimethoxyvinylsilane, triethoxyvinylsilane, triisopropoxyvinylsilane, methoxy-methacrylsilane and/or 3-methacryloxypropyltriisopropoxysilane.
21. A pressure polymerisation process according to any of the Claims 11-20 characterised in, that said at least one cross linking functional monomer is present in an amount of 0.1-10%, such as 0.3-8%, 0.3-6%, 0.4-2%, 0.5-2% or 1-6%.
22. A pressure polymerisation process according to any of the Claims 1-21 characterised in, that said yielded copolymer additionally comprises monomer units derived from at least one stabilising functional monomer having at least one radically polymerisable group and/or at least one colloidally and/or sterically stabilising group.
23. A pressure polymerisation process according to Claim 22 characterised in, that said at least one stabilising functional monomer is vinylsulphonate and/or sodium vinylsulphonate.
24. A pressure polymerisation process according to Claim 22 characterised in, that said at least one stabilising functional monomer is acrylic and/or methacrylic acid.
25. A pressure polymerisation process according to any of the Claims 22-24 characterised in, that said at least one stabilising functional monomer is present in an amount of 0.01-5%, such as 0.3-2% or 0.05-0.2%.
26. A pressure polymerisation process according to Claims 1-25 characterised in, that yielded copolymer additionally comprises monomer units

derived from at least one monoester of acrylic, methacrylic, crotonic acid and/or isocrotonic acid.

27. A pressure polymerisation process according to Claim 26
characterised in, that said at least one monoester is a C₁-C₁₀ alkyl acrylate or methacrylate, such as methyl acrylate, ethyl acrylate, butyl acrylate, 2-ethylhexyl acrylate, methyl methacrylate, ethyl methacrylate and/or butyl methacrylate.
28. A pressure polymerisation process according to Claim 26 or 27
characterised in, that said at least one monoester is present in an amount of 0.1-50%, such as 1-40% or 5-30%.
29. A pressure polymerisation process according to any of the Claims 1-28
characterised in, a weight ratio charged ethylene to charged vinyl ester of 1-60% ethylene and 99-40% vinyl ester, such as at a weight ratio ethylene to vinyl ester of 1:99%, 10:90%, 15:85%, 40:60%, 50:50% or 60:40%.
30. A pressure polymerisation process according to any of the Claims 1-29
characterised in, that said polymerisation is performed at a pressure of 1-200 bar, such as 3-150 bar or 5-100 bar.
31. A pressure polymerisation process according to any of the Claims 1-30
characterised in, that said polymerisation is performed at a temperature of 0-100°C, such as 5-90°C or 20-85°C.
32. A pressure polymerisation process according to any of the Claims 1-31
characterised in, that said polymerisation is an emulsion, a solution or a suspension polymerisation.
33. A pressure polymerisation process according to any of the Claims 1-32
characterised in, that said yielded copolymer comprises monomer units derived from ethylene and vinyl acetate and that said copolymer is obtained by emulsion polymerisation.